

# INVESTIGATOR'S ANNUAL REPORT

## National Park Service

All or some of the information provided may be available to the public

<b>Reporting Year:</b> 2002	<b>Park:</b> Shenandoah NP
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<b>Permit#:</b> SHEN-2001-SCI-0002	
<b>Park-assigned Study Id. #:</b> SHEN-00260	
<b>Project Title:</b> MONITORING AND ANALYSIS OF REFERENCE SUSPENDED SEDIMENT LOAD IN AN UNDISTURBED, FORESTED, ROSGEN CLASS B CHANNEL IN SHENANDOAH NATIONAL PARK. (MEADOW RUN)	
<b>Permit Start Date:</b> Feb 01, 2001	<b>Permit Expiration Date</b> May 31, 2004
<b>Study Start Date:</b> Feb 01, 2001	<b>Study End Date</b> May 31, 2004
<b>Study Status:</b> Continuing	
<b>Activity Type:</b> Research	
<b>Subject/Discipline:</b> Water / Hydrology	
<b>Objectives:</b> The objective is to determine the actual suspended sediment load, over the range of water discharge rates, for a natural, undisturbed, forested Rosgen Class B (Catena 1994) stream reach in Shenandoah National Park. Rosgen Class B streams occur naturally in the Virginia mountains and upstream valleys. The assumptions are that (1) suspended sediment loads associated with these undisturbed natural channels are not well known, (2) understanding naturally occurring reference suspended sediment loads is helpful to management decision making, policy creation, and water quality standards design, (3) undisturbed forested watersheds provide the most accurate reference to true natural sediment loads, and (4) organizing these data by Rosgen stream type provides meaningful hydraulic and geomorphologic context. Data from undisturbed forest streams, expressed in dimensionless rating curves, may provide a useful benchmark for comparison with suspended sediment loads from other streams of the same Rosgen Stream Type and similar fluvial geomorphology.	
<b>Findings and Status:</b> The study is on going. A setback occurred this year as monitoring equipment was vandalized. The monitoring equipment not taken by the vandals was removed from the monitoring site. Discrete data collection continued at intervals during the fall and winter. Time-series measurements of water quality parameters will resume this spring as new equipment is again installed. In addition to discrete and continuous data collection Wolman pebble counts and stream water stage-discharge measurements continue to be made. A survey of channel geomorphology is scheduled for spring 2003.  The project remains on track. Future analyses of collected measurements are expected to yield the following products:	

(1) A suspended sediment reference rating curve, expressing suspended sediment as a function of stream water discharge for an undisturbed Rosgen Class B Stream Reach in Virginia.

(2) A dimensionless sediment reference curve, expressing suspended sediment as a function of the fraction of bankfull stream water discharge for an undisturbed Rosgen Class B Stream Reach in Virginia.

(3) A non-linear statistical model of suspended sediment load as a function of stream water turbidity for an undisturbed Rosgen Class B Stream Reach in Virginia.

(4) Dimensionless reference curves expressing the ratios of natural channel hydraulic geometry to bankfull dimension for an undisturbed Rosgen Class B Stream Reach in Virginia.

(5) Stream Bed particle size distributions, determined using the Wolman Pebble Count method, for an undisturbed Rosgen Class B Stream Reach in Virginia.

(6) Data showing stream water discharge, water level, turbidity, and suspended sediment load for an undisturbed Rosgen Class B Stream Reach in Virginia.

(7) Ancillary measurements and possible reference rating curves for stream water temperature, conductivity, dissolved oxygen, pH, and nitrate nitrogen in an undisturbed Rosgen Class B Stream Reach in Virginia.

**For this study, were one or more specimens collected and removed from the park but not destroyed during analyses?**

No

**Funding provided this reporting year by NPS:**

0

**Funding provided this reporting year by other sources:**

9000

**Fill out the following ONLY IF the National Park Service supported this project in this reporting year by providing money to a university or college**

**Full name of college or university:**

n/a

**Annual funding provided by NPS to university or college this reporting year:**

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